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RAGE

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Let nature take its course? But dare we permit it to do so? Fires, both man-set and those caused by lightning, are a menace and any reduction in the fire hazard is desirable. The accumulation of insect killed timber, even under so called normal conditions is considerable and the Parks and Forests in the majority of cases are becoming fire traps. It is conceded that under insect epidemic conditions the dead trees on forest areas present a serious fire problem.

The Kaibab plateau is an illustration. This plateau was burned over long before a white man ever saw it, and the timber that was burned was bug-killed, naturally green trees that escaped the insects were also destroyed. A small percentage of mature pines remained to seed the area and a new forest has taken the place of the old. The bugs are getting the upper hand once more but we are going to see that fire does not complete the destruction again. The Indian has been credited with burning many of the forests. Why the Indian? The Indian never burned the Kaibab plateau, it was the result of insect deadenings and lightning. It can easily happen again unless insects are controlled and the area given protection from fire.

Once a fire is started no one can foretell the extent of damage and if we are to protect the western forests tree killing insects must be kept to the minimum. We might as well accept this as uncontrovertible. The fire hazard on the Kaibab plateau is increasing each year, due entirely to the groups of dead and dying pines of all ages and sizes.

The situation on the north rim of the Grand Canyon National Park is simply courting a serious conflagration and the lovely "Red Trees" are in danger. Dr. Burke thinks that man should be careful how he meddles with Nature (and therefore, should let the "Red Tops" stand). We have no argument with Nature but with the bugs that "meddle" redden the foliage and eventually produce the familiar ghost tree. It is a shame that man should profane nature and build roads through the parks and forests. It would be far better and more the order of things to

WESTERN DIVISION NEWS LETTER
Forest Insect Investigations, Bureau of Entomology
U.S. Department of Agriculture
(not for publication)



Northfork, Cal. - Mar. 1, 1924.

AN ANSWER TO DR. BURKE: LET THE BATTLE RAGE
by
W. D. Edmonston.

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allow man to build trails through the underbrush and stumble over the fallen "Red Tops". I am convinced that while some may like dead or dying trees in preference to green ones the tourists do not, nor does the Forester and the Entomologist should not. However we argue the aspect of "ghost" trees the basic principle is the same, and apart from monetary and aesthetic values, the fire hazard takes first place. Fire is more of a problem today than ever before.

Aesthetic values vs. fire hazard, and does a dead tree beautify the forest? Speak, Mr. Tourist, Mr. Forester and you Entomologists.

WHERE ANGELS FEAR TO TREAD

It was a calm and peaceful day until Miller injected me into the controversy by waving the red flag of discussion started by Dr. Burke on "Should Insect Infestation be Controlled". "As a Forest Service man what is your attitude?" All right Mr. Miller, a faint heart never won a fair argument.

Dr. Burke certainly proposed a new one in considering a dead or dying tree as a thing of beauty. If it is, then I do not have an artistic eye. The pristine glories of nature is a nice mouthful but Nature is often a bungler herself and man can improve even the aesthetic values of a forest by controlling any agency that destroys timber.

Edmonston in his reply to Dr. Burke rings the bell when he discusses the fire hazard as the fundamental principle underlying forestry. Everyone who has fought fire realizes the menace of the snag. The Forest Service to reduce inflammability has gone so far as to conduct experiments to determine the cost of felling snags over wide areas.

The dead or dying tree of whatever species or merchantability is a potential fire hazard and is certainly uninviting to the artistic sense. When multiplied into groups by insect epidemics it invites a conflagration and adds a desolate appearance that is indescribable. Insect infestation should be controlled vigorously whenever it occurs.

Another thought! Charles Darwin and his followers have shown the remarkable adaptability of all life to meet emergencies. Let us assume insect infestation is not controlled in lodgepoles (which by the way have some merchantable value) and this timber is gradually wiped out. Deprived of food the needle borers may transfer their depredations to other and more valuable species. I speak thusly in a sotto voice for my knowledge of bugs is as extensive as my insect Latin, which is Dendroctonus brevicornis. I happened to see the name on Miller's desk.

Let us have green forests and more of them.

F. M. S. - Sierra National Forest.

INTERESTING DEVELOPMENT FROM SLASH STATEMENT.

by
F. P. Keen.

In summarizing the statements as to the entomological aspect of slash disposal, I was forcibly impressed with the uniformity with which the statements and data pointed to the conclusion that the greatest effect of slash was that of attracting the beetles to the general vicinity of the slash rather than any effect in breeding up insects after they have arrived.

If this point is definitely proved it will explain a lot of things.

Take *D. Monticolae* for instance. It doesn't breed in slash but the records are full of cases where heavy epidemics were started around camp sites, new cabins and even control operations. Mr. Miller's experience in Tenaya Lake Control, where the heaviest infestation following control work was in the treated area, can be explained by the habit of the beetle.

This tendency is not so strong with *D. brevicornis* but it is present nevertheless. Look at the way *D. brevicornis* comes in and attacks trees adjacent to trap trees, often not even attacking the trap tree itself. Patterson's Greenspring Highway Slash study brings out the same thing; a concentration near the slash and then a decline. Concentration in the control areas explain why the results following the first year of control have been no better than they have been, it is a case of drawing the beetles out of neighboring territory and concentrating them in the control area resulting in a 40% reduction instead of a 80% or 90% reduction if this concentration had not been operative.

We have recognized this concentration before but have never stressed the point, I believe it is a very important fact that has been partially overlooked.

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DEATH TO THE KILLER OF TREES.

Come all you forest-loving men,
And read what I have to say
About a beetle called *Dendroctonus*
Which undoubtedly aims to stay;
This beetle may hail from Noah's Ark-
Tho I'm not prepared to say;
It lives on the pitch between wood and bark
And kills the trees that way.

In August, when the sun is hot-
And in September, too
The young broods bore out thru the bark
And this is what they do:
Attack green trees, and lay their eggs
And then their work is done;
It can truly be said the trees are dead
But there's lots of work for someone.

WASHINGTON D. C. CONTRIBUTORS - COME AGAIN!

The following is taken from a letter from Mr. R. A. St. George. I hope that the field men will keep this in mind and cooperate whenever possible in the valuable work that he is doing. - J. M. M.

"I have found the Western News Letters very interesting and helpful, particularly the timely editorials which appear as special features in each issue. There are many suggestions brought out in these discussions valuable to all of us.

Doctor Craighead suggested that, as I review certain forestry magazines and lumber journals, notes or abstracts of articles be made which might be of interest to the Division Staff. As you know, I am particularly interested in work relating to crude forest products and hope that I can keep in touch with men conducting similar work in the west.

In connection with experiments relating to rustic work, and the need of a solution to treat infested wood, we have found that damage to logs may be checked by thoroughly saturating them with liquid orthodichlorobenzene. Doctor Snyder also reports it effective against *Lyctus*.

We have also submerged in water, infested ash, hickory and pine logs, approximately two feet long and eight inches in diameter. The logs were removed at intervals of 2 weeks, 3 weeks, 1 month and 4 months. A recent examination of the logs showed that two and three weeks of submergence were not effective; one month's submergence only partially effective; and four months' immersion killed all of the larvae and barkbeetles. Further experiments will be conducted to note whether four months' submergence is necessary.

I am also interested in biological and systematic larval studies of the Coleopterous families, Alleculidae, Tenebrionidae, Lagriidae and Melandryidae. Our National Collection is greatly in need of additional material in the immature stages of these families, especially genera occurring in the West. Any material either for rearing or otherwise, which could be sent in from time to time, would be greatly appreciated."

LEAD-CABLE BORER IS FEATURED

Under the title "Two Extraordinary New Pests" the American Weekly Sunday supplement of the Hearst Papers of February 24th gives a good popular account of the Lead-Cable Borer. Illustrations and facts from Bull. 1107 are used. Getting in touch with a feature writer has its advantages from a publicity standpoint. - H. E. B.

THE OTHER SIDE TO THE STORY.

On page 5 of the February News Letter Mr. Miller gives the results of an experiment in burying in dry soil yellow pine bark infested with Dendroctonus brevicomis. His results show that the mortality in the buried broods ranged from 0% to 55%.

A similar experiment was carried out at the Ashland Station in the summer of 1920 with entirely different results from those Mr. Miller reports. Three yellow pine bark sections of one square foot each were taken from a trap tree for the test. These contained full grown larvae and pupae of D. brevicomis. The bark was taken from the lower section of the trunk and averaged $1\frac{1}{2}$ inches in thickness. It was buried July 13, three more sections were collected from an infested standing tree and buried August 7. These sections contained full grown larvae, pupae, and some new adults. The bark remaining on the trees from which the sections were taken was left intact and the development of the broods recorded for a check on the buried bark. The new beetles had all emerged from this bark on October 10. The bark sections were buried in moist soil at depths varying from 3 to 12 inches. Three sections were buried in ground on which the sun shone during the midday period. The other three were buried where the soil was shaded during the entire day.

The bark was excavated October 15th and examined. All sections were found to be saturated with moisture and covered with vegetable mold. The beetles in all stages were dead. Even the new adults in the sections buried last did not survive.

The mortality occurring in the buried broods was probably caused by the mold or fungus which developed in the bark, which in turn no doubt was due to the moist condition of the soil in which it was buried. In Mr. Miller's test the bark was buried in dry soil which apparently does not adversely affect the development of the beetles.

However, even if it were always possible to secure this high mortality by burying infested bark in moist soil this method of bark disposal would not be practical in control work on account of the difficulties of its application.

Apparently moist soil is a specification which will have to be met in order to insure the success of this method and this would not be easily found during the summer season. Besides the idea of digging into rocky hill-sides of some of the infested yellow pine forests would probably cause the more efficient lumberjacks on a treating crew to throw down their axes and quit.

- J. E. P.

DOINGS IN THE FIELD

Field Station, Coeur d'Alene, Idaho

During the past month our program has been just the usual office routine and winter work. I spent the first part of the month in the preparation of a series of five lectures which were to be given to the forestry students at the University of Idaho during the week of February 11 - 15. Due to an attack of quinsy I was obliged to postpone this trip. As the worst features of this disease are the intense pain caused by eating or talking, you can all imagine what a terrible hardship this was for me.

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Mr. Rust has completed a set of lantern slides, illustrating the most important insects of this region, for the office of Public Relations, Forest Service, District I. Some thought has also been given to the problems of exhibits for the coming season. A large Dendroctonus beetle is under construction, which is supposed to draw even more than our share of the sight seeing laymen.

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Funds have been made available for the inauguration of a small experimental control project in the white pine stands of the Coeur d'Alene Forest. The region selected is an isolated one which has been used as a check area for several years. An attempt will be made to treat all infested trees. This work will start sometime during the latter part of May or the 1st of June.

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The present plan of routing all important letters and reports through the different stations is indeed a most excellent one. This offers an opportunity for us to disseminate any important data which we may have, to keep in touch with other stations and the Washington Office.

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Field Station, Northfork, California.

On February 11, Wagner and Person, with Forest Examiner Sanford's class of "cub Rangers" made a cruise of the cutover lands of the Prescott timber sale in Jose Basin fifteen miles south of Northfork. Two days were spent in an examination of the area to determine what effect the beetle loss would have on the

policy of leaving a certain percent of thrifty trees on the area to provide the increment for a second cutting.

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Morrow, Person, Wagner and Miller with Ranger Wofford of the Sierra made a cruise of the Chiquito of the San Joaquin project February 19 to 23. Usually a trip to the back country can best be made by dog team at this season of the year, but because of the unusually open winter we decided that the condition of the infestation should be determined and plans for control settled upon without further delay.

Conditions found were about what can usually be expected in May. There was no snow below the 6000 foot contours. Broods in the infested trees were advanced and it was evident that control must be undertaken promptly if it is to be effective before emergence occurs. In order to protect the extermination experiment we laid on with a crosscut saw and treated the ten trees found on the borders of this area. Bug trees on the entire control area were fewer in number than at any time since the work started and the work this spring will be carried out with a small crew.

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During the week, February 25 to March 1, a joint ranger meeting of the Sequoia, Stanislaus and Sierra National Forests was held at Northfork. The insect control question was brought up for discussion. Mr. Miller gave a lantern slide talk.

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Field Station, Klamath Falls, Oregon

Mr. S. R. Black has resigned, effective February 29, as Secretary of the Board and Area Manager of Area 3, on the Southern Oregon-Northern California project. We regret very much to see Mr. Black leave since he has been, in a large measure, responsible for the administrative success of the project.

The Board has decided to close the project office and turn over the duties of Mr. Black to the Forest Service office at Lakeview. Ranger Frizzell will act as Area Manager during the coming spring season of control work.

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Southern California has nothing on Klamath Falls this year. It still remains bright and sunny, no snow or rain so far this year. The winter camp in the Klamath Canyon reports that one third of the D.brevicomis broods have

changed to new adults and will soon emerge. This means a long season of beetle activities and the question is to what extent will the results of control work be offset by such increase. It doesn't look very hopeful for natural control this coming season.

Forest Insect Laboratory, Palo Alto, California

Dr. H. E. Burke made a field trip to the Del Monte Forest at Pacific Grove February 20 - 22. The prepupal larvae of the Monterey pine saw fly are resting comfortably in their pupal cells in the sand beneath the defoliated trees.

Several mature Monterey pine trees were found which seemed without question to have been killed by *Dendroctonus valens*. Successive attacks killed section after section of the bark at the base of the tree until the girdling was complete and the tree died. Some of the trees were infested from the ground up to about six feet. Large larvae, pupae and young beetles occurred in the inner bark. *Ips plastographus* and *Ips radiatae* were infesting the bark of the trunks. Besides the parent adults numerous eggs and young larvae were found in the inner bark.

An unusual type of injury was found in the Bishop pine forest on the north slope of Middleberry Hill. The tops and upper branches of many of the trees over a large area turned noticeable yellow about the 15th of February. A close examination indicated that the larger part of the injury is due to the girdling of the pine rust gall, *Peridermium* sp. Most of the remaining injury is due to the girdling of the small bark beetle, *Pityophthorus carmeli*. The why of the sudden turning of the foliage is not known. According to popular opinion it is due to the bright sunny weather and the absence of rain.

Field Station, Tucson, Arizona

This station will be moved to Albuquerque, New Mexico, before the field season opens. Mr. Edmonston is now at Colorado Springs where the old files and other station property have been stored, and is getting them ready to ship to the new location. Mr. Hofer will stay at Sabino Canyon until the field experiments are started on the Kaibab project.

HISTORICAL INSECTS

J. C. Evenden sends this reference:

In 1763, in the Forest of Hartz (Germany) a million and one-half trees were killed by barkbeetles. "Often did the priests implore the Divine clemency to put a stop to the ravages of these insects." Has anyone an earlier record?

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MOUNTAIN PINE BEETLE THREATENS FOREST SERVICE EXPERIMENTAL AREA.

The following discussion was included in the report of the District I Investigative Committee for 1924:

"The Committee again gave serious attention to the vast insect infestation in the lodgepole type which for some years has been steadily advancing south along the continental divide with its boundaries in four or five National Forests. At some distance to the sides of this main infestation are comparatively small isolated infestations. Last spring an experimental control project was started in one of these, the Hunters' Gulch area on the Helena Forest. The infested trees to the number of approximately 500 were located and the bark peeled. An examination in the fall showed that the infestation had been reduced 94 per cent. On the Maggie area, another isolated infestation, which was used as a check, the infestation increased several hundred per cent. One of the main objects of an experiment of this sort is to determine whether these outlying infestations can be controlled and thus restrict the widespread extension of the main infestation.

The question also arose whether it would not be possible in some way to protect the Bernice experimental forest from the on-sweeping infestation in the lodgepole type. This area of 3000 acres contains an unusually desirable distribution of age classes and is the most suitable area in the lodgepole type for the location of permanent experiments in silviculture. A road to make it accessible for this purpose has already been built to it at the cost of several thousand dollars. It was suggested that the advancing insect infestation might be fought in front of the experimental area for several years until the beetle attack had swept by and around the area. This gave rise to another interesting possibility in insect control, viz., that of fighting an infestation on the flank so as to direct it away from valuable bodies of timber into less desirable bodies. If a vast beetle infestation is making such widespread progress across the country as this one is, and there is a lack of funds or knowledge or a lack of sufficient value on the part of the timber itself to make direct suppression possible, why cannot the strategy of steering it to one side be employed? The Committee believes there is excellent opportunity to test out the possibility of this in the lodgepole type and there is a very urgent purpose in doing so in the instance of the Bernice experimental area on the Deerlodge Forest.

HIGH-LIGHTS ON MAINTENANCE CONTROL

For those who do not wish to wade through the tables of the "Fourth Progress Report, San Joaquin project", which has been sent on the round robin route to the Western stations, the following comments are offered:

The purpose of this project in its inception was to test out the possibility of maintaining control on an area where the White and Friant Lumber Company and the Forest Service had expended \$25,000 with considerable success in controlling an epidemic of the western pine and mountain pine beetles.

One of the early features of the project was to try out summer control work by the use of trap trees and solar heat. The results have led us to throw the trap tree into the discard and have convinced us of the advantage of adhering to fall, winter and spring work as the basis for attack upon *Dendroctonus* infestations. As we know but little about the natural factors that govern the increase and decrease of infestations, the project is primarily a test of artificial methods. The success of the experiment depended upon the effectiveness of these methods in holding down losses during a period when natural influences favored an increase of the beetles.

In 1920 and 1921 the infestation remained endemic, but in 1922 the beetles accommodately started a general increase which reached its height during 1923 and apparently has started to decline. Continued work was kept up on about 20,000 acres and a much larger acreage was intensively cruised as a check. During this cycle the increase on the worked area amounted to 20%, while on the check areas the increase amounted to 132%.

This apparent holding of the increase on the control area resulted in a saving of 924,000 board feet. The work cost approximately \$3,000.00. On this basis if stumpage values amount to \$3.50 per thousand, intensive work can be demonstrated as a paying proposition.

For experimental purposes the intensity of the control was varied on four different units of the control area and a corresponding variation in results is evident. Some interesting results have developed on the extermination unit where the attempt was made to treat all infested trees and to continually exterminate beetles as fast as they came into the area. For the first two years it seemed as though the beetles were coming in as fast as we could kill them out and that intensive control work was having very little effect. But in the examination made this month we found this unit practically clean of infested trees except for a few on the borders. It finally looks as though we have handed old "John L. *Dendroctonus*" a wallop that has put him down for the count.

Results seem to be in sight at last on this project and this coming season will certainly uncover some mighty interesting facts.

J. M. M.